Unit testing:

Cutting point-After button task reads from the fifo:

1. Test that a fifo read from an empty fifo returns false.
2. Test that a fifo read from a fifo returns the correct value.
3. Test that the rail gun charge gets calculated correctly.

Cutting point-After physics task updates values periodically.

1. If capsense force is not equal to 0, check if the horizontal position of the platform is correct.
2. For satchels, check that the proper number of satchels are in the air.
3. Check that the vertical position of the satchels was updated correctly.
4. If something collides with a wall, check that its velocity changed sign.
5. If the shield was activated during the physics update, check if any satchels in range were properly destroyed.
6. When a satchel reaches the ground, check that the satchel’s x-position is on target.

Cutting point-after the display/LED task updates periodically

1. Check that the left LED turns on and off at the correct duty cycle.
2. After the castle evacuation time expires, check the left LED is constantly on.
3. Check that the Pulse width for the right LED is relatively equal to the current force magnitude.

Project Summary:

This week, I planned out unit tests that could be implemented and implemented the basic satchel physics and display for my project.

Summary Effort/Estimate:

I have 28.9% of my current work (13 estimated hours out of 45 total) in 23.3% of the budgeted time (10.5 hours spent out of 45 hour estimate) For the work that has been completed, I took 0.81x (2.25 actual hours/3 estimated hours) as much time as I estimated.

In Scope work items:

Task Diagram-complete-3 hours

Unit Testing-not complete-8 hours

Test drafting-complete- 3 hours

Test implementation/completion – 5 hours

Physics Task-not complete-15 hours total

Platform physics-not complete-5 hours

Satchel physics-complete-5 hours

Railgun physics-not complete-5 hours

Display Task- not complete-12 hours

Satchel display- complete-2 hours

Platform display- not complete -2 hours

Railgun display- not complete -3 hours

LEDs – not complete- 3 hours

Other displays (castle, shield, etc.) - not complete -2 hours

Button Task - not complete- 5 hours

Capsense Task- not complete- 2 hours

Total Time-45 hours

* Unit Testing
  + Having unit tests is a nice way to check the correctness of my code for later stages of the project. Even though I will not be implementing the tests, they are a good way to check for certain values while debugging.
* Satchel Physics/Display
  + Overall I think this was a good place to start actually implementing the project with this step, since it helped me remember a bit about kinematics and start using some of the edge cases associated with the physics task. I think there will be a bit more to implement with the satchels in later phases, especially once I start creating the platform, but having the general idea of how the satchels work is very helpful. I’d also like to implement having a periodic throw option if I have some extra time near the end of the project if possible.

Work time for week 2

Unit testing- 1.5 hours

Setup/physics-45 minutes

Satchel physics-4 hours

Satchel display-2 hours